

JUL 26 2007

Application No.: 10/800,168

Art Unit: 1745

Docket No.: TOW-068

AMENDMENTS TO THE CLAIMS

1. (currently amended) A fuel cell system comprising a fuel cell having an anode and a cathode, wherein a hydrogen-containing gas is supplied to said anode and an oxygen-containing gas is supplied to said cathode for generating a load current, said fuel cell system further comprising:

a humidifier for humidifying said oxygen-containing gas supplied to said cathode of said fuel cell; and

an oxygen-containing gas flow rate controller for controlling a flow rate of said oxygen-containing gas supplied to said cathode such that humidity of said hydrogen-containing gas is maintained within a predetermined range less than 100%;

a humidity sensor for detecting humidity of said hydrogen-containing gas; and

a circulation passage for circulating said hydrogen-containing gas to supply said hydrogen-containing gas to said anode;

wherein said humidity sensor is disposed in said circulation passage; and

~~wherein said fuel cell system is free of a humidifier for humidifying said hydrogen-containing gas supplied to said~~ on an anode side of said fuel cell.

2. (canceled)

3. (canceled)

4. (currently amended) A fuel cell system according to claim 1, further comprising:

~~a circulation passage for circulating said hydrogen-containing gas to supply said hydrogen-containing gas to said anode; and~~

a hydrogen-containing gas flow rate controller,

wherein said oxygen-containing gas flow rate controller controls a flow rate of said oxygen-containing gas supplied to said cathode and said hydrogen-containing gas flow rate controller controls a flow rate of said hydrogen-containing gas supplied to said anode such that

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humidity of said hydrogen-containing gas is maintained within a predetermined range less than 100%.

5. (currently amended) A fuel cell system comprising a fuel cell having an anode and a cathode, wherein a hydrogen-containing gas is supplied to said anode and an oxygen-containing gas is supplied to said cathode for generating a load current, said fuel cell system further comprising:

a humidifier for humidifying said oxygen-containing gas supplied to said cathode of said fuel cell; and

a switching valve;

a bypass passage as a passage of said oxygen-containing gas bypassing said humidifier;

and

a valve controller for controlling said switching valve such that said oxygen-containing gas selectively passes through said humidifier or said bypass passage, for maintaining humidity of said hydrogen-containing gas within a predetermined range less than 100%;

a humidity sensor for detecting humidity of said hydrogen-containing gas; and

a circulation passage for circulating said hydrogen-containing gas to supply said hydrogen-containing gas to said anode;

wherein said humidity sensor is disposed in said circulation passage;

said valve controller controls a flow rate of said oxygen-containing gas passing through said humidifier or said bypass passage for maintaining humidity of said hydrogen-containing gas within a predetermined range less than 100%; and

wherein said fuel cell system is free of a humidifier for humidifying said hydrogen-containing gas supplied to said on an anode side of said fuel cell.

6. (canceled)

7. (canceled)

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8. (currently amended) A fuel cell system according to claim 5, further comprising:

~~a circulation passage for circulating said hydrogen-containing gas to supply said hydrogen-containing gas to said anode; and~~

a hydrogen-containing gas flow rate controller for controlling a flow rate of said hydrogen-containing gas circulating through said circulation passage;

wherein said valve controller controls a flow rate of said oxygen-containing gas supplied to said cathode and said hydrogen-containing gas flow rate controller controls a flow rate of said hydrogen-containing gas supplied to said anode such that humidity of said hydrogen-containing gas is maintained within a predetermined range less than 100%.

9. (currently amended) A method of operating a fuel cell system comprising a fuel cell having an anode and a cathode, wherein a hydrogen-containing gas is supplied to said anode and an oxygen-containing gas is supplied to said cathode for generating a load current, said method comprising the steps of:

humidifying said oxygen-containing gas supplied to said cathode of said fuel cell; ~~and~~
controlling a flow rate of said oxygen-containing gas supplied to said cathode such that humidity of said hydrogen-containing gas is maintained within a predetermined range less than 100%;

detecting the humidity of said hydrogen-containing gas with a humidity sensor; and
providing a circulation passage to circulate said hydrogen-containing gas to supply said hydrogen-containing gas to said anode;

wherein said humidity sensor is disposed in said circulation passage; and

~~wherein~~ said fuel cell system is free of a humidifier for humidifying said hydrogen-containing gas supplied ~~to said~~ on an anode side of said fuel cell.

10. (canceled)

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11. (canceled)

12. (currently amended) The method of claim 9, further comprising the steps of:

~~providing a circulation passage to circulate said hydrogen-containing gas to supply said hydrogen-containing gas to said anode; and~~

maintaining humidity of said hydrogen-containing gas within a predetermined range less than 100% by controlling the flow rate of said oxygen-containing gas supplied to said cathode and a flow rate of said hydrogen-containing gas supplied to said anode.

13. (currently amended) A method of operating a fuel cell system comprising a fuel cell having an anode and a cathode, wherein a hydrogen-containing gas is supplied to said anode and an oxygen-containing gas is supplied to said cathode for generating a load current, said method comprising the steps of:

humidifying said oxygen-containing gas supplied to said cathode of said fuel cell with a humidifier;

providing a bypass passage as a passage of said oxygen-containing gas bypassing said humidifier; and

controlling a switching valve such that said oxygen-containing gas selectively passes through said humidifier or said bypass passage, for maintaining humidity of said hydrogen-containing gas within a predetermined range less than 100%;

detecting the humidity of said hydrogen-containing gas with a humidity sensor and maintaining the humidity of said hydrogen-containing gas within a predetermined range less than 100% by controlling the flow rate of said oxygen-containing gas passing through said humidifier or said bypass passage; and

providing a circulation passage to circulate said hydrogen-containing gas to supply said hydrogen-containing gas to said anode;

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wherein said humidity sensor is disposed in said circulation passage; and
~~wherein~~ said fuel cell system is free of a humidifier for humidifying said hydrogen-containing gas supplied ~~to said~~ on an anode side of said fuel cell.

14. (canceled)

15. (canceled)

16. (currently amended) The method of claim 13, further comprising the steps of:

~~providing a circulation passage to circulate said hydrogen-containing gas to supply said~~
~~hydrogen-containing gas to said anode;~~

controlling a flow rate of said hydrogen-containing gas circulating through said
circulation passage; and

maintaining humidity of said hydrogen-containing gas within a predetermined range less
than 100% by controlling a flow rate of said oxygen-containing gas supplied to said cathode and
controlling a flow rate of said hydrogen-containing gas supplied to said anode.